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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/722,339

11/28/2000

Roland A. Smith

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20988

7590

12/13/2004

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CANADA

EXAMINER

PHAN, HANH

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/722,339

Applicant(s)

SMITH ET AL. 

Examiner

Hanh Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 07/06/2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3, 13, 15, 25, 27, 32, 37, 39, 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi et al (US Patent No. 6,535,313) in view of Hughes et al (US Patent No. 6,747,971).

Regarding claims 1, 13, 25, 37 and 44, referring to Figures 5 and 7, Fatehi teaches a method of equalization across N channels where N is an integer greater than 1 of a multi-channel link of a communications network, comprising steps of:

distributing each one of M data signals, where M is an integer greater than 1 across the N channels of the link, such that each data signal is conveyed through each one of the N channels as a composite data-stream (see Fig. 5, col. 7, lines 10-24, Fatehi teaches that the data sources 102-1 through 102-M each output there data in electronic form to elastic buffers 402-1 through 402-M. The electronic switch or multiplexer 403 combines the data into a multiplexed signal. The output of the multiplexer 403 is used to modulate onto one or more optical signals by Electrical/Optical converters 504-1 through 504-N. Further, in col. 7, lines 5-10, Fatehi

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teaches that it is possible to interchange the position of the electronic space switch 403 and the elastic buffers 402 (1 through M). Additionally, two sets of buffers can be used, one on either side of the electronic space switch 403, as is done in traditional electronic routers. Additionally, while separate buffers 402 are shown, it should be noted that a single shared buffer could be utilized instead); and

processing the composite data-streams conveyed through the N channels to recover the M data signals whereby performance variations between the N channels are equalized by averaging within each of the M data signals (see Fig. 7, col. 8, lines 32-48).

Fatehi differs from claims 1, 13, 25, 37 and 44 in that he fails to specially teach distributing each one of M data signals across the N channels of the link such that a substantially equal proportion of each data signal is conveyed through each one of the N channels. However, Hughes in US Patent No. 6,747,971 teaches distributing each one of M data signals across the N channels of the link such that a substantially equal proportion of each data signal is conveyed through each one of the N channels (see Fig. 3, col. 5, lines 56-67 and col. 6, lines 1-26). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the distributing each one of M data signals across the N channels of the link such that a substantially equal proportion of each data signal is conveyed through each one of the N channels as taught by Hughes in the system of Fatehi. One of ordinary skill in the art would have been motivated to do this since Hughes suggests in column 5, lines 56-67 and col. 6, lines 1-26 that using such the distributing each one of M data signals across

the N channels of the link such that a substantially equal proportion of each data signal is conveyed through each one of the N channels have advantage of allowing distributing and conveying the data signals through a multi-channel network.

Regarding claims 3, 15, 27, 39 and 45, the combination of Fatehi and Hughes teaches dividing each one of the M data signals into N respective sub-streams of substantially equal length and interleaving the sub-streams into respective ones of the N channels (see Fig. 3 of Hughes, col. 5, lines 56-67 and col. 6, lines 1-26).

Regarding claim 32, the combination of Fatehi and Hughes teaches the means for processing a respective composite data-stream received over each of the N channels comprises: means for dividing each composite data-stream to recover respective sub streams of each data signal; and means for interleaving respective recovered sub-signals of each data signal to recover each one of the M data signals (see Fig. 7 of Fatehi).

4. Claims 2, 14, 26 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi et al (US Patent No. 6,535,313) in view of Puc et al (US Patent No. 6,452,707).

Regarding claims 2, 14, 26 and 38, Fatehi teaches all the aspects of the claimed invention except fails to teach each data signal is a Forward Error Correction (EEC) encoded data stream. However, Puc in US Patent No. 6,452,707 teaches each data signal is a Forward Error Correction (EEC) encoded data stream (see Fig. 2, col. 4, lines 7-42). Therefore, it would have been obvious to one having skill in the art at the

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time the invention was made to incorporate the each data signal is a Forward Error Correction (EEC) encoded data stream as taught by Puc in the system of Fatehi. One of ordinary skill in the art would have been motivated to do this since Puc suggests in column 4, lines 7-42 that using such the each data signal is a Forward Error Correction (EEC) encoded data stream has advantage of allowing improving spectral efficiency in wavelength division multiplexing fiber optic communication systems and detecting the data transmission errors and to compensate the loss of the data on the link.

5. Claims 4-12, 16-24, 28-31, 33-36, 40-43 and 46-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatehi et al (US Patent No. 6,535,313) in view of Hughes et al (US Patent No. 6,747,971) and further in view of Brown (US Patent No. 6,754,211).

Regarding claims 4, 10, 16, 22, 28, 34, 40, 46 and 47, Fatehi as modified by Hughes teaches all the aspects of the claimed invention except fails to teach inserting a respective predetermined unique identifier into each sub-stream. However, Brown in US Patent No. 6,754,211 teaches inserting a respective predetermined unique identifier into each sub-stream (see Fig. 1, col. 3, lines 62-67 and col. 4, lines 1-63). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the inserting a respective predetermined unique identifier into each sub-stream as taught by Brown in the system of Fatehi modified by Hughes. One of ordinary skill in the art would have been motivated to do this since Brown suggests in column 3, lines 62-67 and col. 4, lines 1-63 that using such the inserting a respective

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predetermined unique identifier into each sub-stream have advantage of allowing determining which port the data packet is to be forwarded and distributing the data signals through a multi-channel network.

Regarding claims 5, 9, 17, 21, 29, 33 and 41, the combination of Fatehi, Hughes and Brown teaches steps of partitioning the data signal into a sequential series of data units having a predetermined length and forwarding each successive data unit, in turn, to a respective sub-stream (see Fig. 1 of Brown).

Regarding claims 6, 11, 18, 23, 30, 35, 42 and 48, the combination of Fatehi, Hughes and Brown teaches each data unit has a length of one or more bits (see Fig. 1 of Brown).

Regarding claims 7, 19, 24, 31, 36, 43 and 49, the combination of Fatehi, Hughes and Brown teaches the step of interleaving one sub-stream of each data signal into a respective one of the N channels comprises using a sequential interleaving process to select a data unit from one sub-stream of each data signal in a predetermined order, and forward each selected data unit, in turn, to the channel (see Figs. 5 and 7 of Fatehi and see Fig. 1 of Brown).

Regarding claims 8, 12 and 20, the combination of Fatehi, Hughes and Brown teaches the step of processing a composite data-stream conveyed through each of the N channels comprises steps of dividing each composite data-stream to recover respective sub-streams of each data signal and interleaving respective recovered sub-streams of each data signal to recover each one of the M data signals (see Fig. 7 of Fatehi).

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Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

A handwritten signature in cursive script, appearing to read 'Hanh Phan', is written over a horizontal line.

Hanh Phan

Primary Examiner

12/06/2004